HYDRO SEEDING AND MULCHING

1. SCOPE

The work shall consist of the application of seed, fertilizer, wood fiber mulch (and often a tackifier) in a slurry of water to prevent soil erosion. The slurry application is intended to provide an environment conducive to plant growth. It is useful on steep, erosive slopes particularly where access is limited. Slope lengths of 125 to 225 feet can be treated by this method.

2. METHODS AND MATERIALS

A tank-mounted truck equipped with a special pump and continuous agitation system is used. The pump forces the slurry through a top-mounted discharge nozzle or discharge can be through 100 to 200 feet of hose. Tank capacities range from 1,000 to 3,000 gallons. Water is added first and then the wood fiber, tackifier (if used), fertilizer (if used), and seeds. Any coated seed would be loaded last. Legume seeds should be pellet inoculated with a special bacteria to stimulate the fixing of nitrogen. Seed should not be added to the slurry until immediately prior to beginning of the operation, and not remain in the tank for more than 30 minutes. Single application hydro-seeding uses 1,500 to 2,000 pounds of wood fiber mulch per acre with the seed and fertilizer. Split application hydro-seeding and hydro-mulching uses 500 pounds of wood fiber mulch per acre with the seed and fertilizer in the first pass followed by an application of 1,500 to 2,000 pounds of wood fiber mulch per acre and tackifier (if used). Most tackifiers are applied at 100 pounds of dry ingredients per acre.

Hydro-mulching using 500 to 1,000 pounds of wood fiber mulch per acre and tackifier is often applied over loose, blown straw to tack it down. Hydro-mulching using 2,000 to 3,000 pounds of wood fiber mulch per acre and tackifier can be used for temporary protection where landscaping will be planted after the rainy season. Wood fiber is usually dyed to aid in uniform distribution, but care should be taken to ensure that concrete or painted surfaces are not stained and that plants and animals are not injured. Wood fiber has natural tackifying properties but adding a tackifier should be considered on steep slopes.

3. SAFETY

Steep, erosive slopes are often unstable, and a portion of soil material may move, or a more massive landslide movement may take place. Equipment should be operated only from roads, bridges, and reasonably level areas where slopes are stable and risks of rollover are insignificant. Individual operators spreading hydro-mulch with hose applicators should be particularly careful while working on steep slopes containing rocks or stumps.

4. SEED MIXTURES AND TIME OF PLANTING

Appropriate seed mixtures, application rate (per acre) and the time of planting shall be implemented as specified in the

ITEMS OF WORK AND CONSTRUCTION DETAILS.
Application rates as indicated below should be doubled when used in hydro-seeding applications.

Spring seedings. Spring seedings will be completed by May 15. Seedings will be made after May 15 only when there is a minimum of two feet of moist soil. The soil must also be moist to within two inches of the surface. Where soil moisture allows spring seeding after May 15, seedings must be completed by August 15.

Dormant seedings. Dormant seedings can be completed when soil temperatures 2 inches below the soil surface remain at 40° F. or less for ten or more days (approximately October 15).

Species with high counts of dormant seed such as green needlegrass and Indian ricegrass must be planted as a dormant fall seeding unless germination by standard seed test is greater than 50%. If dormant species are a minor component of a mixture, spring seeding is acceptable.

Seed mixtures for west of the Continental Divide and foothills and mountains east of the Continental Divide will be determined based on which "zone" a land unit is associated with. Following are zone descriptions:

Zone 1. Dry, Warm Sites. Open grasslands and woodland benches, at low elevations on all aspects and on south- and west-facing slopes at higher elevations. This is dry Douglas fir, limber pine, and ponderosa pine habitat types with a significant bunch grass component in the understory.

*Seed Mix A:
Slender wheatgrass (Pryor)--4 lbs/ac
Bluebunch wheatgrass--3 lbs/ac
Thickspike wheatgrass--4 lbs/ac
Big bluegrass (Sherman)--1 lb/ac

*Seed Mix B:
Slender wheatgrass--2 lbs/ac
Pubescent wheatgrass--8 lbs/ac
Sheep fescue--4 lbs/ac

*All seed mixtures are in pure live seed.

Zone 2. Moist, Warm Sites. Moderate environments receiving more effective precipitation than the dry, warm sites. Found on north- and east-facing slopes on lower elevations, all aspects at mid-elevations, and on south- and west-facing aspects at higher elevations. Douglas fir and ponderosa pine habitat types.

*Seed Mix A:
Slender wheatgrass (Pryor)--4 lbs/ac
Mountain brome--4 lbs/ac
Streambank wheatgrass--3 lbs/ac
Big bluegrass (Sherman)--1 lb/ac

*Seed Mix B:
Perennial ryegrass--3 lbs/ac
Orchardgrass--4 lbs/ac
Intermediate wheatgrass--8 lb/ac

*All seed mixtures are in pure live seed.

Zone 3. Moist, Cool Sites. Found predominantly on north and east-facing slopes at mid-elevations and on all aspects at high elevations. Douglas fir with blue huckleberry in the understory along with Grand fir, Western cedar,

Western hemlock habitat types.

*Seed Mix A:
Slender wheatgrass (Prior)--4 lbs/ac
Beardless wheatgrass--4 lbs/ac
Mountain brome--4 lbs/ac
Big bluegrass (Sherman)--1 lb/ac

*Seed Mix B:
Tall fescue--4 lb/ac
Timothy--4 lbs/ac
Canada bluegrass--2 lbs/ac

*All seed mixtures are in pure live seed.

Temporary Cover. Temporary cover that provides cover until perennial vegetation can be established shall consist of spring grains, winter grains, annual ryegrass, or other suitable quick establishing annual vegetation as specified in the SPECIAL PROVISIONS.

Annual ryegrass (not cereal rye) will be planted at 10 pounds per acre. All small grains will be planted at 30 pounds per acre.

The application rate per acre and date of planting shall be completed as shown in the ITEMS OF WORK AND CONSTRUCTION DETAILS. Seed quality shall conform to the current Montana rules and regulations and shall be from the latest crop available.

5. SPECIAL PROVISIONS

Special Provisions will be attached to this construction specification, as appropriate, that define the site-specific details.

6. MEASURMENT AND PAYMENT

For items of work for which specific unit prices are established, each item will be measured to the nearest unit applicable. Acreage will be measured to the nearest 0.1 acre. Payment for each item will be made at the agreed to unit price for that item. Such payment will constitute full compensation for all labor, equipment, tools and all other items necessary and incidental to completion of the work.